

"Sprengel has ingeniously demonstrated, in some hundreds of instances, how the corolla serves as an attraction to insects, indicating by various marks, sometimes perhaps by its scent, where they may find honey, and accommodating them with a convenient resting-place or shelter while they extract it. This elegant and ingenious theory receives confirmation from almost every flower we examine. Proud man is disposed to think that

'Full many a flower is born to blush unseen.'

because he has not deigned to explore it; but we find that even the beauties of the most sequestered wilderness are not made in vain. They have myriads of admirers, attracted by their charms and rewarded with their treasures, which very treasures would be useless as the gold of the miser to the plant itself, were they not thus the means of bringing insects about it."

It seems to me that this is a pretty decided indorsement of Sprengel's views.

W. WHITMAN BAILEY

Brown University, Providence, Rhode Island, U.S.A.,

December 4

Salt Rain and Dew

I SENT Mr. H. N. Draper's letter (NATURE, vol. xxix. p. 77) to my father-in law, Dr. Petzholdt, of Dorpat University, who has made a special study of South Russia, Caucasus, Russian Turkestan, &c., and his reply is that it is a fact long known to chemists that the aqueous vapour in the atmosphere due to the evaporation of sea and salt-lake waters invariably contains chloride of sodium, which is precipitated to the ground by rain and dew. Dr. Petzholdt is not aware, however, that the phenomenon is more striking on the coasts of the Caspian and Aral than in other localities. In the *Annalen der Chemie und Physik*, vol. xxxv. p. 329, Liebig writes : "All the rain water which fell in Giessen (Hesse) during two years, in seventy-seven rainfalls, contained salt."

F. GILLMAN

Quintana 26 (Barrio Arguelles), Madrid, December 6

Lunar Rainbow

ABOUT 6.20 this evening I was fortunate enough to observe a fine lunar rainbow. Previous to its appearance there was a halo caused by a band of cirro-strati, which gradually developed into a crescent-shaped rainbow, which, after disappearing for a minute or two, again was observed, only circular, finally fading away as the clouds dispersed about 6.40.

C. H. ROMANES

Beckenham, Kent, December 11

AT 1.30 on the morning of the 12th inst., during the progress of the storm, I looked out of the window in a north-easterly direction and observed a beautiful lunar rainbow. The arc at first was complete, and faint traces of prismatic colours, especially on the outside, were noticeable. A portion in the middle having for a moment disappeared, the complete arc again again became visible, but with only a whitish colour.

M. F. DUNLOP

Greenwich, December 15

PROFESSOR NILSSON

THE oldest naturalist in the world, as respects both age and the priority of his writings, has now left it.

S. Nilsson of Lund, in Sweden, was born in 1787, and therefore was nearly a centenarian at the time of his death. His earliest publication was in 1812, being a paper on the various methods of classifying the Mammalia; and in every subsequent year he enriched the scientific literature of his own and other countries. The *Annals and Magazine of Natural History* and the Reports of the British Association for the Advancement of Science, for instance, contained several articles from his experienced pen. He especially devoted himself to the fauna of Scandinavia, and became the pioneer of that host of naturalists who have so ably distinguished themselves by similar researches and publications. He was a zoologist, palaeontologist, anthropologist, ethnologist, and antiquary. *Nihil tetigit quod non ornavit.*

His works consisted chiefly of scattered papers; but in 1822 he published his "*Historia Molluscorum Suecicæ Terrestrium et Fluvialium*," which has still a standard

reputation. As it did not include the marine or Baltic Mollusca, the gap was twenty-four years afterwards more than filled up by the eminent Prof. Lovén; and that department of the Scandinavian fauna has now, through the continual labours of the late Prof. Sars and his no less eminent son, Dr. Danielssen, Mr. Herman Friese, the Fraulein Esmark, Dr. Westerlund, the late Mr. Malm and his son, Prof. Steenstrup, the late Dr. Mörch, Dr. Berg, Dr. Collin, and many other conchologists, received as great a degree of attention as has been bestowed on any region of the earth's surface and its circumjacent seas.

The subject of this memoir was, at the last-mentioned date (1822), Regius Professor in the Academy of Lund, and the Director of the Museum of Natural History there. One of his former pupils, Prof. Otto Torell, is well known to all naturalists by his exploration of Spitzbergen, and his present position as the Director of the Geological Survey of India.

We ought to be thankful in recollecting that other veterans of science are still among us, viz. Professors Owen and Milne-Edwards at the age of eighty-three, and Dr. Isaac Lea, in his ninety-third year. The study of natural history is evidently conducive to longevity.

J. GWYN JEFFREYS

SEMITICO-OCEANIC LINGUISTIC AFFINITIES

TO the *Transactions of the Royal Society of Victoria* for May, 1883, the Rev. D. Macdonald contributes a paper, in which he endeavours to establish the identity of the Oceanic and Semitic languages. This is announced as an important discovery both ethnologically and from the theological standpoint. It clears up, we are told, "the hitherto impenetrable mystery surrounding the origin of the Oceanians," because "the Semitic language could only have been carried into Oceania by Semites from the Semitic mainland." It also disposes of the new-fangled "evolution theory," which draws support "from the existence of savages and the supposition that they are descended from 'hairy quadrupeds,' . . . for it shows, as to one of the greatest bodies of savages, that they are descended from the most renowned and civilised people of antiquity." Certainly these are weighty conclusions, which, if established, would fully justify the further inference that "this discovery is more important on the whole than that of the Assyrian or Euphratean inscriptions deciphered of late with such marvellous ingenuity."

By "Oceanic" the writer understands all the languages except the Australian current in the Indo-Pacific insular world. These he evidently regards as constituting a single linguistic family, the Malayo-Polynesian, "comprising the Malagasy, Malayan, Polynesian, and Melanesian, better called the Papuan." His philology has thus not got beyond the days of Forster and Marsden, or the earlier writings of Prof. Whitney, all of whom are appealed to in support of this now exploded theory. The readers of NATURE need scarcely be reminded that from the Malayo-Polynesian must henceforth be detached all the strictly Papuan and Melanesian tongues, as constituting a fundamentally distinct order of speech, itself doubtless embracing many stock languages. Hence the same reasoning process that establishes the identity of Semitic and Oceanic would also establish the identity of Semitic with any other stock languages wherever spoken. The process thus proves too much, that is, proves nothing.

Although Semitic is here compared generally with the whole of the heterogeneous "Oceanic" group, it is remarkable that Efate is taken as the chief point of comparison, not that this is claimed to be a typical member of the Oceanic group, but merely because it happens to be the dialect with which the writer is most familiar. Now in Efate, a small island about the centre of the New Hebrides, there is a good deal of linguistic confusion, strictly Polynesian (Sawaior) dialects being

spoken at the Polynesian settlements of Mel and Fil, while Melanesian idioms prevail elsewhere. But from the examples adduced, and especially from such agglutinating forms as *mitángu*, *mitáma*, *mitána* = my, your, his, eye (*máta* = eye), it is obvious that the Efatean in question is not an Oceanic (Malayo-Polynesian) dialect at all, but a strictly Melanesian tongue affected by Oceanic influences. The language on which the author mainly relies is consequently useless as a point of comparison between the Semitic and Malayo-Polynesian families.

The actual relation between these two families is again stated to be "that of an ancient to a modern language, as Latin to French, Saxon to English. This implies that we shall find the Oceanic, as compared with the Semitic, characterised by phonetic and grammatical decay, &c." Doubtless there is in Oceanic, as in all linguistic groups, abundant evidence of decay. But, as compared with the Semitic, it must be regarded not as a modern, but as an almost infantile, form of speech. Semitic stands in some respects on a level with, if not even on a higher footing than, Aryan itself, as regards its grammatical evolution, whereas in Malayo-Polynesian the verb is not yet clearly differentiated from the noun. Thus even in Samoan most of the so-called verbs are merely nouns modified by detached relational particles, and, like the adjectives, forming reduplicate plurals. Compare *nofo* = to sit, pl. *nonofo*, with *tele* = great, pl. *tetele*. This instance alone will satisfy the ordinary linguistic student of the prodigious gulf that separates the Oceanic from the Semitic with its highly complicated system of verbal conjugation.

And how does the writer propose to bridge over this gulf? Mainly by a string of words taken without method from any given Oceanic language, and compared with any member of the Semitic group to which it may happen to bear some faint resemblance in sound if not in sense. No attempt is of course made to establish some general preliminary system of "lautverschiebung," without which all such comparisons are absolutely destitute of any scientific value. They resolve themselves mainly into onomatopoeic forms, the common property of all articulate speech, or into some of those numerous etymological curiosities which can always be found by the diligent seeker, but which are such terrible pitfalls for the unwary.

Most of the Hebrew terms themselves are moreover taken either in secondary and later forms, or else in secondary and later meanings, forms and meanings which are consequently useless for the purpose of comparison between the organic Semitic and Oceanic languages. Thus the Efate *mitaku* = to fear, is compared with the Hebrew *dag*. But this *dag*, or rather *dāag* (דָּג), Jer. xvii. 8), is a comparatively modern form of an older *dāab* (דָּבַב), which primarily means to melt, and which neither in sense nor sound shows any further resemblance with the Melanesian *mitaku*. This is only one instance from among many. The further back these supposed parallelisms are traced, the more divergent become the lines, until at last they fade away into parabolic curves, and leave the gulf between these linguistic systems more impassable than ever.

Mr. Macdonald does not expressly mention the "lost tribes." But it is on these flimsy grounds that, in a slightly incoherent concluding sentence, he claims to have rediscovered in the South Seas a lost Semitic people, "their language full-orbed and in all its living vigour"!

A. H. KEANE

AMERICAN WHEAT¹

THIS is a pamphlet issued by the Chemical Division of the Department of Agriculture, U.S., and is further specified as *Bulletin No. 1*. It may be described

¹ "An Investigation of the Composition of American Wheat and Corn." By Clifford Richardson, Assistant Chemist. (Washington Printing Office, 1883.)

as an elaborate monograph upon the composition of American wheat, and the subject is handled with great thoroughness, although the value of the result obtained falls considerably short of being startling. It is a specimen of painstaking analytical work which may form the basis for generalisations of value in the hands of able agriculturists and statisticians.

The variation in the composition of the wheat grain itself as affected by climate is rendered evident, and a comparison is instituted between the composition of European, American, Egyptian, and Australian wheats. The author in the first place produces elaborate tables of analysis, showing the composition of numerous varieties of wheat. Secondly, he considers the composition of the typical or average wheat of each of the American States. Lastly, he compares American wheats with those produced in other quarters of the globe. Among this mass of analyses it is difficult to arrive at conclusions, and there is some danger of falling into error. Mr. Clifford Richardson finds that American wheats are drier than European wheats in the proportion of 10·27 to 14 per cent. of moisture. The percentage of dry matter is consequently much higher, and the grain is proportionately more valuable. The carbohydrates average 72 per cent. instead of 68 per cent. as in the case of English wheat for example. The amount of fibre is also less in American wheats. The ash constituents are most abundant in wheat from newly cultivated tracts, and on old worn out lands both the ash constituents and nitrogen are considered to have diminished.

American wheat is, however, deficient in albuminoïds to a degree which appears to disconcert Mr. Richardson more than we think it need. In American wheat we evidently have a small grain, specially free from fibre (bran), peculiarly dry, very rich in carbohydrates and oil, but deficient in albuminoïds. European wheats sometimes contain 19·5 per cent. of albuminoïds, and ordinarily 13 per cent. American wheats contain upon an average 11·95 per cent. of albuminoïds, but in Oregon and on the Pacific coasts only 8·6 per cent. Mr. Richardson seems to overrate the importance of this fact. He appears to be in doubt as to the true importance of the albuminoïds when he says, "The albuminoïds are regarded, and probably rightly, as the most valuable part of the grain." He might, however, have been led by his investigations to doubt how far a high percentage of albuminoïds is the best indication of quality in wheat. First, Australian and Egyptian wheats are both somewhat deficient in albuminoïds, and are yet known to be remarkably fine. He also notices that while Oregon and Californian wheats contain comparatively low amounts of albuminoïds, the grains are large and handsome. He further points out that the proportion of albuminoïds in spring wheats is higher than in winter wheats, although he fails to notice that all wheat-growers know that winter wheat is better than spring wheat. Having concluded that American wheat is at fault in this particular, he endeavours to explain why such is the case with a view to remedying the defect. So far from being a fault, the richness of American wheats in starch, and the comparatively smaller proportion of gluten, appears to us as indicative of its high quality. "Tail" corn contains more gluten than "head" corn, and badly matured grains are usually rich in this important constituent. A little consideration as to the constitution of a grain of wheat will show that the gluten is not the best criterion of value. The outside layers of the grain contain the gluten, and then honeycomb cells inclose the starchy interior. This outer portion of the kernel is the first to ripen while growth still continues along the axis and in the centre. The fully matured grain, in fact, becomes like a well-packed trunk, thoroughly stuffed out, and this with starch grains. If we are correct in this view of the maturing of the grain, the percentage of gluten must diminish in proportion as starch is